

BLADE RUNNER GOES BLADE BLASTING

This kit was designed around the Kyosho Bladerunner but is also suitable for the Kyosho Bluestreak; Kyosho Jetstream 800, ABC Baltek and Super Hawaii in fact any hull with a steerable outdrive.

The Kyosho Bladerunner is a licenced replica of the ICE Marine Bladerunner. Designed by naval architect Lorne Campbell the boat is produced by ICE Marine (www.icemarine.com) of the UK.

The boat is an 'Air Entrapment Monohull', or to you and I a trimaran. It differs from a conventional monohull, in having twin tunnels either side of the extremely slender twin stepped hull, finishing with sharp knife-like sponsons at the sides.



This combination gives the Bladerunner low drag, and aerodynamic lift, improving performance and softening the ride over conventional monohulls. A similar concept underlies the design of the batboat style offshore boat which gets lift in a similar way and is used in CENS Grey Thunder.

Powered by twin Mercury outboards the Bladerunner has a top speed of over 100-mph in race trim. The factory Bladerunner S7 competed in the 1999 Class Three (Six-Litre) World Championship in which it gained heat placings driven by Jeremy and Alistair Watts.

In model form the Bladerunner has been criticised for a lack of speed and poor handling. While the criticism has been focussed on the hull, it is as likely that driveline used in the model and the absence of dynamic controls fitted to the full size boat are the cause of the problems.

To date more powerful motors and better hardware have provided speed but done little address the vulnerability of the hull to torque roll. Nor have they included a mechanism to replace the computer regulated water ballast and trimmable outboards of the Bladerunner S7.

This article shows you how to get speed and handling from hulls that will blow you friends away!

The beginning First catch your Bladerunner. Strip the hull of everything. Keeping the stock solid shaft stuffing tube, drive dog prop retaining nut, hull parts, bellows and pushrods,





The ABS hull is not a rubber band but there is a noticeable improvement in tracking and steering response after the hull is made more rigid. Three tunnel to deck braces on each "wing" stiffen the hull significantly and improve the resistance the hatch edges to cracking associated with flex.



Along the floor of the hull I ca'd some 1 cm (1/2") birch – this will act as motor bearers later. On the outside of the centre hull I used ride plates to sharpen edges. Extend the birch to the rear edge of the front step.

Like most boats with steerable outdrives, the stock handling of the Bladerunner is a nightmare spinning when running in a straightline and unstable while cornering.

Most of this arises from the combination of a narrow centre hull (which makes the boat vulnerable to torque roll) and the use of a large single prop (which is more likely to create torque roll). For instance a straightline spin can occur when the hull rolls, the sponson digs in and the hull pivots on the drag it creates; spectacular but definitely not satisfying.

The ICE Marine Bladerunner overcame these problems by using twin outboards with counter-rotating props, which eliminated prop torque.

Sticking with a single prop requires the resistance to torque roll to be improved. To do this add depth to the sponsons so they act to limit roll as it begins without acting as ride surfaces when running in a straight line.



Begin by removing the 'knife' edge on the bottom of the sponsons. Ca balsa blocks 225 mm long to deepen the sponsons by 20mm (0.8") on the outside and 15mm (0.6") on the inside of the tunnels . This "running surface" should be 20mm (0.8") wide with a deadrise of approx 5 degrees.



These surfaces are clear of the water once under way but create lift as the hull begins to roll. They are not perfect solution but they are effective, keep the hull level and eliminate torque roll and spins.

The full size boat had trimmable out boards and water ballasting system. This enabled the COG to be moved forward aft and the drives to be trimmed to suit straight running or turning. In turns the cog moved rearward and trim altered to keep the rear of the boat settled.

In the model as the hull turns and heels the sponsons dig in and the hull rocks forward onto the front step lifting the prop and rudder out of the water resulting in a spin. To alleviate this the forward part of the sponson needs to be extended and depth added. This is not unlike the way stumble blocks are used to prevent outboard tunnel hulls from rocking forward and lifting the prop/leg clear of the water

The forward part of the new extension starts 400mm (16") from the front of the hull. The running surface curves downward from the top of the tunnel to be 10 mm (0.4") deeper than the sponson running surface where it meets it. The curve should be smooth and nearly flat at the trailing edge of the front step

This completes the modifications to the hull.

Motor and driveline

These comments are for a 12 cell setup but would apply equally to an 8 cell setup.

To install the motor I used a CEN 775 motor mount modified extensively to take a Midi Mega 6. The mount is screwed to the bearers formed by the birch blocks in the bottom of the centre hull. A flexible connector attaches the motor to the drive shaft. The motor is mounted toward the front of the second step to give good balance with 12 cells



Once the motor and connector are fixed install the driveline. The drive shaft is a 4mm (5/32") shaft 207mm (8.25") in length. I used the stock Kyohso drive dog and prop retainer. In my model I used a new shaft and cf stuffing tube with teflon bushings. From memory the stock shaft should do the job. Mount the shaft on the hull centre line and as low and flat as possible.

To mount the stuff tube drill a hole centred 9-12mm or 3/16"-1/2" above the keel. The greater distance allows for the use of larger dia lower pitch props (better for getting out of the hole). The lower is for smaller high pitch props (better for speed).

I recommend the greater distance and a larger prop be used. This hull, despite being 750 mm (30") in length, has a very small footprint/planing surface, which is 1/2 the area of a Maus Bullet. This has several implications

First it sits very deep in the water at rest - up to the tunnel and has a very large wetted surface area with a very big transom area buried in the water - all this adds up to drag.



this means it is especially hard to get out of the hole.

It also means, in turns it is prone to falling off the plane at part throttle; this is more of a problem in small ponds. (yes I use the closest one!). A large prop assists greatly with getting the boat on the plane and maintaining speed through turns, particularly at part throttle. Compared to a 42mm prop the increased thrust of a 45-47mm prop improves the ease of driving the model to a noticeable degree.

With a 42mm prop it is necessary to continuously watch the boats planing condition with a 47 it is not a concern.

I use an Octura M447 on the Mega Midi. This is a very hot (high current draw) and revvy motor - it turns the same rpm/v as a 12 cell rigger motor like the Hacker B50-7xl. It would not be possible to run this prop/motor combination were the shaft mounted deeper in relation to the waterline and more of the blade in the water when surfacing. I have also seen this technique used on monos to extend runtime very effectively. Using a smaller prop increases the off-plane or partial plane time in a run, increasing the time for which current draw is high, increasing motor heat and reducing runtime.

In plain English this setup gives me blade area when the hull is submerged and pitch and rpm when the prop is in surfacing mode. This provides a good balance of acceleration speed and runtime without undue heating. A good quality esc of 60 amps should be more than adequate with most 12-cell setups.

Once the shaft is inserted in the stuffing box and inserted in the motor connector, set the stuffing box so it extends 40mm beyond the transom. Align the shaft with the motor and connector and tack the stuffing box in place at the transom. I used birch blocks placed either side of the shaft as braces. These were ca'd to the hull and the stuffing box. Apply liberal amounts of thick ca and accelerator to the whole and seal the stuffing tube at the transom

The rudder is straightforward. Any rudder may be used. In testing, the unmodified hull was more stable with a Hughey blade rudder, than a wedge. However, any thin wedge or Fullers style rudder should be fine with the hull mods.

I have centred the rudder across the hull and the rudder pivot point is 85mm (3.4") from the transom. The rudder is angled rearward at the bottom of the blade by 1 degree to give lift in turns. In this case a Fullers rudder bracket was used at the transom. An aluminium/cf spar was used as a rudder post and drilled at an angle for the rudder and water pickup. The rudder runs to 40mm (1.6") below the depth of the rear planing surface of the hull.

With this setup the hull makes stable fast turns in either direction.

Inside the hull a Hitec HS 300BB servo is mounted to a spruce cross brace which is screwed to the hull in the tunnel roof. The mounting points are reinforced by ca'ing around the points where the brace meets the hull. The front of this brace should be no more than 65mm (2.6") from the transom to allow space between it and motor for the cell packs.



Use adhesive backed velcro on the inside of the centre hull to mount the cells and keep the cog relatively low. For 12 cells a piece of 1cm (1/2") square wood wrapped in velcro keeps the cell packs separated and off the driveline. This cell position is almost perfect for CoG. For 18 cells the spacer between the packs is replaced with another pack of cells. The Velcro on the packs forms a strong bond, which will survive a blowover

I have included a short video of testing after an earlier set of mods – it gives you an idea of the speed and handling which were improved further by these modifications

Results

Power in the model with a 700bb 8.4 is 5 times that of a strictly scale model.

The speed of a scale model of the 120-mph race boat is 28mph. The model setup with a 700bb 8.4v will run into the mid 30's, and run times can be extended to 5 minutes plus!

Handling is very offshore scale it rides through turns with a very scale motion.

What we used	\$US	\$AUD
700BB 8.4	\$48	\$77
Water pickup rudder and bracket	\$45	\$69
Connector	\$5	\$10
Flex Shaft and stuff tube	\$30	\$45
Motor mount	\$12	\$18
Wood	\$10	\$16
Octura X642	\$15	\$27
Total	\$165	\$262

For that Kyosho's Bladerunner is a sport blaster! [SEE THE VIDEO HERE](#)

The kit is also suitable for the

- CEN Grey Thunder;
- Kyosho Bluestreak;
- Kyosho Jetstream 800,
- ABC Baltek
- ABC Super Hawaii

in fact any hull with a steerable outdrive. You can get everything you need to make you boat into a Blaster from <http://www.fastelectrics.com/lightningspeedkits.asp>

Go fast and have fun

www.fastelectrics.com

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